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$$\frac{x_1^2}{h_1^2}+\frac{x_2^2}{h_2^2}\ldots+\frac{x_n^2}{h_n^2}=1.$$

The result of his analysis is

$$\mathrm{v}=(-)^{i-\frac{n}{2}}\frac{h_1h_2\ldots h_n\pi^{\frac{n}{2}}}{\Gamma(i)}\int_0^\infty\frac{ds\left(\frac{d}{d\sigma}\right)^{i-\frac{n}{2}}f(\sigma)}{s^{i-\frac{n}{2}+1}\{(s+h_1^2)(s+h_2^2)\ldots(s+h_n^2)\}^{\frac{1}{2}}},$$

in which

$$\sigma=\frac{a_1^2}{s+h_1^2}+\frac{a_2^2}{s+h_2^2}\ldots+\frac{a_n^2}{s+h_n^2},$$

and $f(\sigma)$ is a discontinuous function, which is supposed to vanish when $\sigma \angle 1$.

As particular examples of this result, the author deduces the attraction of an ellipsoid on an external or internal point, when the force varies as the inverse square and as the inverse fourth power of the distance. In the latter case some remarkable consequences are seen to flow from the discontinuous character of the function $f(\sigma)$. When the density is uniform, and the point external, all the elements of the integral which precede or follow the break in that function vanish, while at the break a single finite element occurs. This gives a finite algebraic expression for this case of an ellipsoid's attraction. When the ellipsoid is of variable density, and the point external, the attraction is given partly by a finite algebraic expression, and partly by a definite single integral.

Similar remarks apply to all inverse even powers of the distance, except the square.

Dr. Allman read a paper on the larva state of Plumatella, and on the anatomy of Polycera quadrilineata.

In this paper the author described the occurrence in *Plumatella fruticosa*, Allm., of a larva state presenting a very different form from that assumed by the mature animal. This larva was discovered in a glass of water containing specimens of the adult Bryozoon, and when first observed was enclosed in a delicate, transparent, egg-shaped sac, through which the various parts of the contained embryo might be seen with ease.

Within this external sac the embryo is suspended in a transparent cell, the rudiment of the future polypedom, and presents distinct traces of tentacula, stomach, and intestines. The rudimentary muscles may also be plainly seen. The tentacula are as yet very imperfect, they are short and thick, when compared with the same organs in the adult animal, and strongly suggest the idea of having been formed by the longitudinal division of what had been, in a still earlier stage, a continuous infundibuliform membrane. The cell or rudimental polypedom is of an oval figure, densely ciliated posteriorly. Where the cilia terminate, the membranous walls of the cell present an invagination to a considerable extent, and are again reflected outwards to undergo a still further invagination, by which a sheath is formed for the rudimental tentacula, and the digestive organs suspended in the visceral cavity.

When the embryo Plumatella is released from the external egg-shaped envelope, its locomotive powers being now no longer restrained, it soon becomes evident how active a creature it is, for withdrawing the anterior portion of its cell, which, as we have already seen, is deprived of cilia, within the posterior ciliated portion, the latter is completely closed around the anterior end, and the little embryo thus becomes closely wrapped in a natatory mantle, through whose agency it is carried through the surrounding fluid in endless and elegant gyrations.

Beyond this point in the development of Plumatella, Dr. Allman was unable to adduce any observations; the little larva, however, now described, presenting as it does all the essential elements of bryozoal structure, belongs undoubtedly to a phase considerably in advance of the well-known locomotive gemmules of the marine bryozoa.

Dr. Allman also made some observations on the Anatomy of *Polycera quadrilineata.*

In this mollusk the buccal mass is furnished with two powerful corneous jaws, acted on by distinct muscles, and contains a spinous tongue of very complex structure. The œsophagus leads to a stomach, which is imbedded in the anterior extremity of the liver, and from which an intestine first passes forward and then curves backwards, to terminate at the anal outlet, which is situated between the two posterior leaflets of the bronchial tuft. Two pair of glands are connected with the buccal mass. The liver, though in its natural condition it is compact, like that of Doris and its allies, may yet be unravelled so as to display its minute structure; and it is then seen to consist essentially of a ramified tube, whose branches end in slightly dilated *culs de sac*, and are furnished along their sides with closely-set spheroidal divertacula, which would seem to be the essential secreting portion of the organ.

The heart consists of an auricle and ventricle, and occupies the back of the animal immediately in front of the branchial tuft; it is furnished with auriculo-ventricular and aortic valves.

The brain consists of six supra-œsophageal ganglia, and the nervous collar is completed below by a band of nervous matter, which passes from the most external ganglion of one side, round the ventral aspect of the œsophagus, to the corresponding ganglion of the other side; the nerves which supply the dorsal laminated tentacula are furnished at their base with large ganglionic dilations; and two small pharyngeal ganglia are placed upon the ventral aspect of the œsophagus just as this tube leaves the buccal mass.

The eyes are almost sessile upon the anterior ganglia of the brain, having the whole thickness of the integumentary structures intervening between them and the external world. They consist of a spherical lens, imbedded in the anterior extremity of a pigment cup, which is penetrated posteriorly by the very short optic nerve, and the whole surrounded by a delicate capsule.

The auditory capsules, with their otolites, are easily demonstrable.

The generative apparatus is complex. It is hermaphrodite; the male organs consist of testis vas deferens and penis, and the female of ovary, oveduct, uterus (?), and certain accessory glands.

The President appointed, under his hand and seal, the following Vice-Presidents:

George Petrie, Esq.
Captain Larcom, R. E.
Sir William R. Hamilton, LL.D.
Rev. Franc Sadleir, D.D., Provost.

DONATIONS.

Famine and Fever in Ireland. By J. Corrigan, M.D. Presented by the Author.

Annual Report of the Leeds Philosophical Society, for 1844-5. Presented by the Society.

London University Calendar, for 1846. Presented by the University.

Memoirs of the Astronomical Society. Vol. XV. *Proceedings of the Royal Astronomical Society, from November* 8*th*, 1844, *to January* 9*th*, 1846. Presented by the Society.

Journal of the Asiatic Society of Bengal. Nos. 75 and 76 (for 1845). Presented by the Society.

Transactions of the Linnean Society of London. Vol. XIX. P. 4. *Proceedings of the Linnean Society of*